

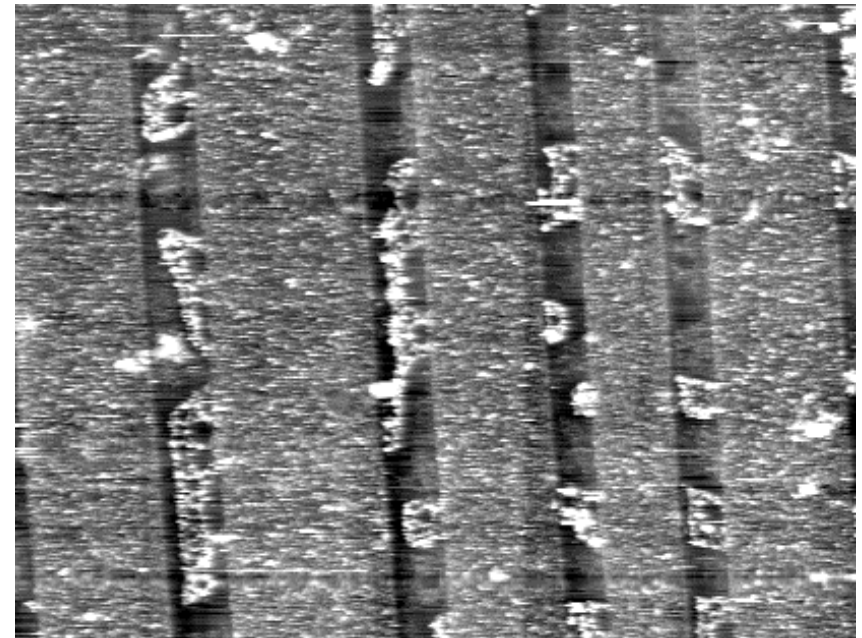
Undercover Ferroelectric

(modifies the photochemical properties of titania)

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Photochemical reactions on ceramic surfaces are important for sustainable hydrogen fuel synthesis. While TiO_2 is a promising catalyst for solar hydrogen production, its efficiency is reduced by the recombination of charge carriers before they react on the surface. To separate the carriers and improve efficiency, we have supported a TiO_2 film on a BaTiO_3 substrate. The pattern of reduced Ag (see AFM image) shows that the polarization of the underlying ferroelectric domains influences the charge carrier motion and the chemical properties of the film. We intend to exploit this phenomenon to create high reactivity composite microstructures.

right: AFM image of TiO_2 film surface, supported on BaTiO_3 , reduced Ag (light contrast) localized on specific domains. Below is a transverse schematic of the structure.



10 μm

